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THE CANADIAN GYPSUM INDUSTRY

BY

R. M. SANTMYERS

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THE CANADIAN GYPSUM INDUSTRY[1]

By R. M. Santmyers[2]

CONTENTS

	Page
Introduction	2
Nova Scotia	3
Principal districts	3
Production	4
Production by districts	4
Cost of production	5
Methods of production	6
Shipping and handling	6
Prices	7
Labor and wages	7
List of producers	8
Ontario	12
Production	14
Manitoba	14
New Brunswick	15
British Columbia	16
Statistical summary	16
Production	19
Consumption	20
Plant location	22
Exports	25
Imports	25

[1] The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from U. S. Bureau of Mines Information Circular 6162."

[2] Mineral specialist, rare metals and nonmetals division, U. S. Bureau of Mines; Statistics compiled by Irene Aitkens.

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INTRODUCTION

The production of gypsum is one of the oldest industries in Canda, and in point of gypsum output Canada ranks third among the countries of the world.

Gypsum was discovered in the Maritime Provinces at a very early date, but there is no authentic record of production until about 1822, when gypsum was mined on a small scale in Ontario. Since then the production has grown slowly but steadily to more than a million tons. In 1928 the output was 1,205,846 short tons, valued at $3,622,007.

Nova Scotia, New Brunswick, and Ontario, for the early years, were the producing provinces. Manitoba entered the field in 1901, and 10 years later (1911) active operations were started in British Columbia.

At present large quantities of crude gypsum are being shipped from the Maritime Provinces into the United States to be calcined and further manufactured. At the same time, Canada is purchasing from the Unitee States plaster and other gypsum manufactures for her own needs. Domestic production of manufactured gypsum products, however, is again on the increase, and smaller quantities of these products are now being imported into Canada; the reason for this condition, it is claimed, is that up to the present there has not been demand enough to warrant the erection of additional mills in that part of the country. It may be noted, however, that most of the larger producers of crude gypsum are owned or controlled by American capital, and that the phenomenal growth of the exports of Canadian crude gypsum is due to the increasing demand of plants strategically situated along the northern Atlantic seaboard.

For the finer grades of white plaster, such as dental plaster, for which the Nova Scotia rock is admirably suited, and for all grades of finishing plasters, there seems to be a rapidly growing Canadian market. The increased demand for fireproof buildings and the extension of building operations throughout eastern Canada have increased the demand for gypsum plasters and other gypsum building materials. In order to meet this demand, new plants have been erected and existing ones enlarged and modernized. Increased railroad facilities have contributed greatly to this end.

The principal producing centers in the Maritime Provinces are the following In Nova Scotia near Baddeck, Mabou, Ottawa Creek, Cheticamp, and Iona on Cape Breton Island, and near Windsor, Cheverie, Wentworth, and Walton in Hants County; in New Brunswick near Hillsborough in Albert County and at Plaster Rock in Victoria County. In Ontario, Caledonia is the center of the producing district; in Manitoba the production comes from the vicinity of Gypsumville, 170 miles north of Winnipeg; and in British Columbia gypsum is taken from the Falkland deposit, 40 miles southeast of Kamloops.

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The largest manufacturer of gypsum products in Canada is the Canada Gypsum & Alabastine Co. (Ltd.). This new organization took over the Ontario Gypsum Co. (Ltd.), the Nova Scotia Coal & Gypsum Co. (Ltd.), and the Toronto Builders' Supplies Limited, in 1927. 3/ In 1928 it took over the Manitoba Gypsum Co., Winnipeg, and its subsidiary, the British Columbia Gypsum Co. (Ltd.), Port Mann, B. C.

NOVA SCOTIA

In Nova Scotia the gypsum deposits were discovered soon after the settlement of the Province, but there is no authentic history of operations before 1779, and there are no available records showing the exact extent of the business done previous to 1883. 4/ The operators, principally farmers, quarried the rock and hauled it to the point of shipment by means of sleds in the winter and carts or wagons in summer. At the port, they either sold it to local traders or chartered a small vessel in which to ship it to the United States, principally to Lubec, Me. The ship's captain usually acted as the broker. When the ship arrived at the mills, he would sell the cargo for the best price he could get, and then ordinarily would use the money to purchase flour, oil, and other necessities for return cargo.

After the year 1883 the operations were placed on a better business basis. Contracts were made in advance of production for the sale of crude rock along the Atlantic seaboard of the United States. This business prospered, and before long attempts were made to manufacture gypsum products in Canada. Since home consumption was limited, gypsum products made in Canada had to be sold almost wholly across the border, and when in 1890 and again in 1897 the United States increased its duties on imports of such products, all the Canadian mills were closed except one small mill at Windsor, Nova Scotia, which for some years had been making selenite cement for home consumption. Manufacturing has never reached important proportions even in later years.

From 1861 to 1867 25 ports in Nova Scotia were shipping gypsum produced from 12 counties. In 1908 six ports exported gypsum from three counties. Practically all the gypsum produced in the Province to-day is shipped to the United States and comes from four counties -- namely, Hants, Antigonish, Inverness, and Victoria.

Principal Districts

The gypsum in Nova Scotia is found in the lower Carboniferous measures in 32 district areas, and the deposits cover about 625 square miles. 5/ The chief producing center is in the vicinity of Windsor, in Hants County, but Cape Breton is furnishing a larger and larger output. In addition to Windsor, the principal centers are: Cheticamp and Mabou, in Inverness County; Ingonish, Baddeck, Iona,

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3/ Canadian Chemistry and Metallurgy, Gypsum in 1928, Vol. 13, March, 1929, p. (72) 21.

4/ Jennison, Wm. F., Gypsum Deposits of the Maritime Provinces. Department of Mines of Canada. Rep. 84, 1911, p. 16.

5/ Magnuson, E. W. (American Consul, Halifax, N. S.), The Nova Scotia Gypsum Industry. Consular Report Feb. 28, 1929.

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and Ottawa Brook, in Victoria County, Ingonish Harbor in Antigonish County; and Newport, Wentworth, Cheverie, Walton, and Clarksville, in Hants County. Most of these deposits are readily accessible, being situated either near tidewater or near railways.

Production

Gypsum was mined in Nova Scotia as early as 1829, but the quantity was quite small. Even in 1872 the Province produced only 99,470 short tons, but in 1928 it produced nearly 10 times that quantity or more than three times the output of all the rest of Canada.

Table 1 illustrates the rapid growth during the past 10 years:

Table 1. - Gypsum production in Nova Scotia, from 1919 to 1928 1/

Year	Quantity, short tons	Value	Average value per ton
1919	163,852	$ 250,174	$1.53
1920	260,661	573,752	2.20
1921	206,831	511,883	2.47
1922	332,404	580,148	1.74
1923	341,705	747,934	2.19
1924	441,752	915,845	2.07
1925	551,230	1,070,408	1.94
1926	678,107	1,187,918	1.75
1927	829,438	1,512,015	1.82
1928	971,736	2/ 1,764,262	2/ 1.82

1/ Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada. Ottawa, Canada.

2/ Estimated.

Production by Districts

The following tabulated comparison, Table 2, gives the production of gypsum in Nova Scotia, by districts in 1927 and 1928. These figures, which are compiled from those published by the Department of Public Works and Mines of Nova Scotia at Halifax, do not quite agree with those in Table 1, which are taken from the Annual Report of the Mineral Production of Canada, published by the Canadian Government at Ottawa, Canada.

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Table 2.- Gypsum production in Nova Scotia by districts

Districts	1927, short tons	1928, short tons
Hants County-		
Windsor	561,483	682,186
Walton	112,485	90,017
Cheverie	13,804	19,030
Total	687,772	791,233
Antigonish County-		
Ingonish	85,803	96,311
Total	85,803	96,311
Inverness County-		
Cheticamp	40,008	58,736
Mabou	21,335	14,590
Total	61,343	73,326
Victoria County-		
Baddeck	1,911	5,771
Iona	5,510	5,570
Ottawa	9,614	
Total	17,035	11,341
Grand Total	851,953	972,211

Of the 972,211 short tons of gypsum produced in Nova Scotia in 1928, 682,186 tons or approximately 70 per cent was mined at Windsor in Hants County.

The output in 1928 from the Windsor district alone advanced by 120,703 short tons, from an output of 561,483 tons in 1927 to one of 682,186 tons in 1928, a gain of approximately 21 per cent. At Cheticamp the production increased from 40,008 tons in 1927 to 58,736 tons in 1928, or 47 per cent; at Ingonish from 85,803 tons to 96,311 tons, or 12 per cent; at Cheverie, from 13,804 tons to 19,030 tons, or 38 per cent; but at Walton in Hants County there was a slump of 22,468 tons, from 112,485 tons in 1927 to 90,017 in 1928 or 25 per cent.

Cost of Production

The cost of production of crude gypsum in the quarries of Nova Scotia varied roughly from 70 cents to $1.75 a short ton during 1928, depending chiefly on the method of production, whether by hand or by machinery, and on the efficiency of the equipment. 6/ One of the largest gypsum companies in the Province states that it

6/ Ref. cited, p. 3.

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costs them approximately $1.50 to quarry a short ton of gypsum, the 1928 average being $1.47 a ton. Another authority claims that the average cost of production amounts to 75 cents a ton at the mill plus 50 cents for crushing, or a total of $1.25 per ton. The average cost, however, for the production of crude gypsum in Nova Scotia is about $1.50 per ton.

Method of Production

All of the 10 gypsum companies in Nova Scotia (including one branch quarry) operating in 1928, are large users of power, and with one exception they employ steam shovels for removing overburden. One of the largest uses a steam shovel for stripping, gasoline-and-electric shovels for loading, electric pumps for unwatering in the quarries, and electric power at the crushing plant. Another firm at Walton removes the overburden by steam shovel, uses a gasoline-operated portable air compressor with drills for boring and operates its crushing plant by hydroelectric power. At Cheticamp a crude oil engine is used to drive the crusher, whereas a firm at Windsor operates its two quarries by hand but employs hydroelectric power in its calcining plant.

The rock from the quarries is conveyed to the crushing plant and storage sheds either by electric or steam locomotives or by belt conveyors if the quarries are located very close to tide water. From the storage sheds the rock is shipped by boat to the United States or to the calcining plants. The loading of boats destined for the United States is all done mechanically by power-driven belt conveyors which, necessitates crushing the crude rock to convenient size. Certain American operators have contended that this crushing is in effect a step in the manufacturing process and that upon importation into the United States such rock should therefore be subject to duty as a partly manufactured product.

Shipping and Handling

There are excellent facilities for water shipments of gypsum from Hants County, the center of the Nova Scotian gypsum industry. The Gypsum Packet Co. (L of Windsor operates a gypsum fleet of four steamers. Three of these were put into operation in the spring of 1927 and one in the spring of 1929. Each ship has a capacity of about 6,200 tons of gypsum. The service is direct from Windsor to Boston, New York, and Philadelphia. These ships are loaded by conveyor belts and unloaded at the ports of call by clamshell buckets having a capacity of about 10 tons.

The methods of handling and packing the manufactured products follow close those in use in the United States. Finishing plaster is packed in 245 and 320 pou barrels; hard-all plaster in 50-pound paper bags and 100-pound jute bags; and dental plaster in 200-pound barrels. The manufactured products are mostly shipped to various points throughout the Dominion, though some shipments are made to Engl

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South America, and as far as Australia and New Zealand where Canadian gypsum products are in good demand. There are only two firms in Nova Scotia manufacturing finished gypsum products at present. They are located at Iona and Windsor.

Prices

Prices of locally manufactured gypsum products sold on the Canadian market vary according to quality. A Cape Breton firm receives $10 per ton for hard-wall plaster sold in paper bags, f. o. b. factory, and from $10 to $15 per ton for high-grade casting plaster. Some wall plasters are sold on the Montreal market for $10.05 a ton, and the white plaster is sold for $16.30 a ton, f. o. b. railroad cars.

That portion of the crude gypsum that is shipped into the United States to mills controlling the Nova Scotian quarries is billed at various prices ranging from $1.12 to $1.30 a ton for shipments from the Halifax district and from $1.50 to $2 a ton for those from Cape Breton.

Labor and Wages

Labor conditions in the gypsum industry of Nova Scotia are said to be satisfactory. 7/ There is no shortage of either skilled or unskilled workers. During the summer months the number employed is much larger than during the winter months when navigation stops and the quarries reduce their working forces or close down entirely. The larger companies employ more or less permanent working forces and the smaller quarries to a large extent employ farmers who work in the quarries at leisure times. In 1927 six companies out of 11 operated the year round, two worked nine months, two worked six months, and one three months.

The nine-hour day has been universally adopted by the gypsum companies in this Province. Although the workers are not unionized, wages are virtually the same in all districts. The lowest average rates, of course, obtain where the most efficient mechanical equipment is installed, as this reduces the percentage of skilled workers. Wage rates are determined chiefly by the wages paid in other local industries such as fishing and lumbering. Skilled men receive about 45 cents an hour, unskilled workers and laborers about 30 cents, and shovel operators and electricians 65 cents an hour. The hourly wages paid to foremen range from 50 to 55 cents. One firm states that it pays its skilled workers $4 for a nine-hour day, its unskilled hands $3, and its foremen $5.

A noticeable part of the population in the gypsum districts, especially in Hants County, is dependent on the gypsum industry for its livelihood. In 1928 there were 923 men engaged in the Nova Scotian gypsum industry, of which 685 or about 74 per cent, were in Hants County, where one firm alone employed 387 workmen. Of the total of 923 men employed, 665 were working in the quarries and 258 in the manufacturing and shipping branches of the industry.

7/ Ref. cited, p. 3.

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List of Producers

The following is a list of producers of gypsum in Nova Scotia:

THE CANADIAN GYPSUM CO.,
Windsor, Hants County.

The largest operator in Nova Scotia is the Canadian Gypsum Co., which is a subsidiary of the United States Gypsum Company of Chicago, Ill. The company has very large holdings of gypsum-bearing land in the district and operates two main quarries, "The Cables" and "The Meadow" quarries.

The "Cables" quarry is the chief producer, the "Meadows" quarry did not operate during 1928. It is said that the deposit at the "Cables" is overlaid with about 8 feet of overburden, which is stripped off by draglines. Holes 60 feet dee are drilled with air drills for blasting, after which the displaced gypsum is loaded by power shovels, both gasoline and electric, into light railway cars, and hauled to the crusher. After crushing, the rock is placed in covered storage shed until the arrival of vessels for carrying the gypsum to plants in the United Stat The loading of vessels is done mechanically by a conveyor belt passing under the storage sheds.

Electric power is used at the crushing plant as well as at the quarries. It is obtained from the Avon River Power Co.

From the quarry the loaded cars are automatically dumped into a jaw crush of 300 tons capacity per hour, which reduces it to 3-inch size. The discharge fr the crusher drops onto a conveyor belt and is taken up an incline to the storage buildings, each of which has a capacity of 25,000 tons. The second storage shed was built during 1928, and the increased space enables the company to operate dur ing the winter when navigation is closed.

ATLANTIC GYPSUM PRODUCTS (Ltd.),
Cheticamp, Inverness County.

The property of the P. M. O'Neil Gypsum Co. was taken over by the Atlanti Gypsum Products (Ltd.) two years ago. The quarry is located at Belle Marche, 3 miles east of Cheticamp. At least 3 square miles of gypsum-bearing land is held under lease.

The shipping pier is at Cheticamp. A railroad some 2 miles long connects the crushing and storage sheds with the quarry. The crude gypsum is now loaded b shovels onto one-horse carts and is carried to a small crusher at the quarry, fr which it is loaded by gravity into 20-ton side-dump cars. A small steam locomoti is used to haul the cars to the crushing plant, which has just been completed.

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After crushing to 3-inch size the rock is elevated by an endless steel bucket to a revolving screen; the material which passes through is carried by a belt conveyor to a loading shed of the same type as that used at Windsor and Walton. The loading of the rock is done by a conveyor belt moving under the storage shed out to the vessel at the end of the pier.

At the quarry the old face was cleaned up and a new face opened. These two areas are to be connected so that a face about 1,000 feet will be available for working.

Shipments from this plant are made to New York and Portsmouth, N. H. This company also furnished crushed gypsum to the cement plants of the Canada Cement Co.

ATLANTIC GYPSUM PRODUCTS (Ltd.),
Walton, Hants County.

Two quarries, called the "North" and "South," are being operated at Walton. Each quarry is equipped with a steam shovel for removal of the overburden and for loading; a gasoline-operated portable air compressor with jack-hammer drills is used to do the boring. Soft white gypsum, as well as some anhydrite, is shipped from both quarries. A narrow-guage railroad connects the quarries with the crushing plant and shipping pier on the shore, a distance of about three-quarters of a mile. It is operated by two dinky locomotives.

The standard gypsum from this deposit goes to New York, where it is calcined for use as plaster. The anhydrite goes to Norfold, Va., where it is used largely as a fertilizer and moisture retainer in the peanut-growing districts.

In 1927 a transmission line 30 miles long was erected to transmit hydroelectric power from the Avon River Power Co. at Windsor to Walton and Cheverie. The energy is a. c., three-phase, carried at 22,000 volts, and the line has a capacity of 1,000 hp.

CONNECTICUT ADAMANT GYPSUM CO.,
Cheverie, Hants County.

The Connecticut Adamant Gypsum Co. is an American concern which operates two quarries, called the "Foul Meadow Quarries" which were opened in 1927. They are located about 2 miles from the shipping pier and the main highway. A narrow-gauge railway is used to transport the gypsum from the quarry to the shipping-pier storage pile, from which it is carried to the ship by horse-drawn carts.

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The overburden, which is not heavy, is stripped by a gasoline locomotive, and at the present two faces of soft white gypsum have been opened up. The hard rock is still obtained from the old quarry located near the shore close to the shipping pier, and can only be operated at low tide.

All of the rock from these deposits is shipped to New Haven, Conn.

IONA CONSOLIDATED GYPSUM CORPORATION (Ltd.),
Iona, Virtoria County.

The quarry of the Iona Consolidated Gypsum Corporation (Ltd.) is located at Grass Cove, 2 miles north of Iona, a station on the main line of the Canadian National Railroad. The mill adjoins the quarry, and both are connected with the main line at Iona by a spur owned and operated by the company.

This company does not ship any gypsum in the crude form, but calcines the entire output of the quarry. The quarry face is located approximately 500 feet from the mill. It extends about 600 feet in an easterly and westerly direction, averaging in height between 25 and 30 feet. Drill holes are put in with air drills and the rock is shot down. The larger pieces are sledged to man-size and loaded in a horse-drawn steel car. The fines are loaded with forks, and the waste is carried to the shore for easy disposal.

The calcining plant has two standard kettles, and buhrmills are used to grind the calcined gypsum. Finished, hard, and neat plasters, as well as dental plaster, are manufactured and are marketed throughout the Maritime Provinces, Quebec, and Ontario. Some shipments have been made to the New York market and a good tonnage has been shipped direct to the New Zealand market, where a very fine grade of plaster is required.

All water shipments are made from the company's own pier, to which the plaster is hauled on small cars by horses. The pier is close to the mill, so that the hoisting gear of the vessel can be kept going. All rail shipments are loaded at the mill and taken over a standard-gauge track to the main line at Iona.

THE WINDSOR GYPSUM CO.,
Newport Station, Hants County.

The Windsor Gypsum Co. is a subsidiary of the Universal Gypsum and Lime Co., Inc., of Chicago, Ill.

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The property, which consists of about 225 acres, is located 1 mile northwest of Newport Station, near Windsor. Recent work has been carried forward on a face 350 feet long and 40 feet high, extending in a north-easterly direction. The overburden is about 18 to 20 feet thick and the rock surface is very irregular, as the contour of the gypsum is broken by numerous "kettle holes." These holes increase the difficulties of quarry, as the waste sometimes mixes with the good rock. The gypsum produced from this quarry, however, is of a very high grade.

The overburden is removed by a steam shovel and is put into hopper cars running on a narrow-gauge track and is hauled to a waste dump 700 feet away by a gasoline tractor on trucks. Drilling is done by hand augurs; blasting, with black and stumping powder. The good rock is hauled to the stock pile by horse-drawn carts. The gypsum is broken into man-sized pieces for handling and placing in piles for convenient loading. The rock is hauled over the company's track a mile to Newport Station, and thence over the Dominion Atlantic Railroad to the wharf at Windsor. Shipment to final destination is made by steamer or sailing vessel to Newburgh, N. Y.

The plaster of Paris made from the gypsum is used in the manufacture of the highest-grade products, such as dental plaster, confectioners molds, statuary, and architectural pieces, where fine quality is required.

THE WINDSOR PLASTER CO.,
Windsor, Hants County.

The Windsor Plaster Co., a Canadian concern, is operating two quarries -- the Wilkins quarry just outside the town limits of Windsor, from which the crude gypsum is hauled to the calcining plant in Windsor by motor trucks, and the quarry at Clarksville on the Dominion Atlantic Railroad. The crude gypsum from this quarry is loaded into railway cars and shipped to Windsor. All of the rock is stored in a shed of 2,000-tons capacity at the mill. It is hauled on an inclined narrow-gauge rack into the mill where it is fed to the jaw crusher. It then passes to a rotary, which reduces it to half-inch size, and is elevated to four French buhr mills. The ground gypsum is then calcined in kettles, from which it goes by gravity to the cooling bins. It is then elevated and screened, the undersize passing to a small buhr mill where it is reduced to fine size. No gypsum in the crude form is shipped by this company. Their hard-wall and selenite plasters are sold throughout the Maritime Provinces, and some has been shipped as far west as Montreal. The plant operates the year round.

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NORTH AMERICAN GYPSUM CO.,
Baddeck, Victoria County.

The North American Gypsum Co., which furnishes gypsum rock for the Rutland Fire Clay Co., of Rutland, Vt., commenced operations during 1928. The quarry worked at present is known as the Plaster Mines, and is located about 4 miles from Baddeck. A narrow-gauge railway about a mile long was constructed from the deposit to a shipping pier in Baddeck Bay. The covered storage shed is to be torn down, and in the future the rock will be stored in the open. Construction necessary to enlarge the crushing plant and storage facilities in order to save demurrage on large shipments was in progress during the spring of 1929. The gypsum found at this quarry is very white and soft.

The following companies did not operate during 1928:

INGONISH GYPSUM CO. (Ltd.),
Ingonish, Antigonish County.

(A Canadian firm, subsidiary of the Canada Cement Co. The gypsum business of the Canada Cement Co. was taken over by the Atlantic Gypsum Products Co., and the plant at Ingonish closed down.)

NOVA SCOTIA COAL & GYPSUM CO.,
Mabou, Inverness County.

(A Canadian firm, subsidiary of the Canadian Gypsum & Alabastine Co. (Ltd.).)

NEWARK PLASTER CO.,
Ottawa Brook, Victoria County.

(An American concern which ships its rock to the United States.)

CAPE BRETON GYPSUM CO.,
Iona, Victoria County.

(A Canadian firm which has not been in operation since 1926.)

ONTARIO

Since 1822 the gypsum industry in Ontario has had a varied history. To-day, with advantages of manufacture, marketing, and a growing consumption of gypsum products, it is one of the most important of the nonmetallic mineral industries in the Province. 8/

8/ Canadian Mining Manual, Mines Publishing Co, Toronto, 1928, pp. 438 - 442.

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The largest manufacturer of gypsum products in Canada, the Canada Gypsum & Alabastine Co. (Ltd.), is located in this Province. This company is a recent combination of the Canada Gypsum & Alabastine Co., the Ontario Gypsum Co. (Ltd.), the Nova Scotia Coal & Gypsum Co. (Ltd.), and the Toronton Builders' Supplies Limited, which merger took place in 1927. 9/

The new company operated its Ontario properties at Oneida (Lythmore) and Seneca (Caledonia) in 1928. In March, 1928, a bond issue of $2,500,000 was offered the public in order to finance the purchase of the business and property of the Manitoba Gypsum Co., Winnipeg, and its subsidiary, the British Columbia Gypsum Co. (Ltd.), Port Mann, B. C. With the acquisition of the Manitoba and British Columbia properties the company will control the sole production in Canada of certain gypsum products, such as "Gyproc" wall board, partition, and roof tile, as well as "Insulex" and "Alabastine." It will have up-to-date plants at Montreal, Quebec; Caledonia and Lythmore, Ontario; Winnipeg, Manitoba; and Port Mann, B. C. It will also be a large producer of plaster of Paris, Keene's cement, lime, etc., at these and additional plants operated at Elora, Teeswater, and Paris, Ontario.

This company's supply of crude gypsum has been purchased in part from the Canada Cement Co., but its main supplies are from its own mines at or near Caledonia and from its quarry at Mabou, N. S. 10/

The Caledonian operations of the Canada Gypsum & Alabastine Co. (Ltd.) are largely the results of a series of consolidations and purchases dating back to 1917, when the Alabastine Co. of Paris and the Crown Gypsum Co. merged to form the Ontario Gypsum Co. The Caledonia mine was opened in the fall of 1905 by the Alabastine Co., and production commenced early in 1906. Some of the output was sold to cement plants and the rest shipped to a calcining plant of the parent company at Paris, Ont. In 1906 a crushing plant was erected near the Grand Trunk Railway tracks to the west of the station; the rock was hauled from the mine to the crusher over a tramline. In 1920, the holdings of the Canadian Plaster Board Co. were acquired and in 1925 those of the Ebsary Gypsum Co., leaving the Canada Gypsum & Alabastine Co. the only operator in Ontario.

The first mill built by the company at Caledonia was intended only for the crushing of crude gypsum rock, which was then shipped to Paris for calcining. In 1910 construction of a plaster mill was undertaken at Caledonia and which was completed in 1911. The shipping of wall plaster and plaster of Paris was begun in July of that year. In 1913 additions were made to the shipping room so that railway cars could be placed on either side of it.

9/ Canadian Chemistry and Metallurgy, Gypsum in 1923, Vol. 13, March, 1929, p. (72) 21.

10/ Rock Products, notes on the Rock Products Industries in Canada. vol. 31, No. 8, April 14, 1928, p. 79.

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The capacity of the mill now is as follows: Crushed crude gypsum for cement plants, 400 tons a day; calcined gypsum for plaster board, wall board, and gypsum block and tile, 130 tons a day; and calcined gypsum for hard wall plasters of all kinds, 200 tons a day. The output of crude ground gypsum for land plaster is now small.

Although this plant manufactures all of the hard wall plasters, it specializes in two brands - namely, (1) Paristone, including calcined gypsum, retarder, hair, and hydrated lime; and (2) Pulp stone, including calcined gypsum, retarder, and wood fiber.

A recent development at Caledonia for structural gypsum is the manufacture of "Insulex," a product poured in place for insulating walls, floors, roofs, and ceilings. It is made by adding calcium sulphate and aluminum sulphate, finely ground lime rock (having a high calcium content), and retarder to the calcined gypsum. Mixed with an amount of water equal to about one-half its bulk, the powdered Insulex swells to four or five times its original bulk. It sets in 20 to 30 minutes and since it retains its bulky structure, forms a highly efficient insulating medium.

Another development in the use of calcined gypsum is the production of gypsum block and tile. A plant for the manufacture of such block and tile was built by the Alabastine Co. in 1921. In 1922, it was taken over by the Ebsary Gypsum Co., and a one-story frame and block building was erected for the storage of blocks and tile, which formerly had been stored in the open air. In 1925, however, this plant was taken over again by the original company.

Production

In 1928 the Canada Gypsum & Alabastine Co.'s operations in Ontario produced 85,811 tons of gypsum of various grades, valued at $553,271, as against 83,998 tons worth $500,688 in 1927. The grades in 1928 were as follows: Crushed gypsum 120,675 tons; fine ground, 1,134 tons; calcined , 4,113 tons sold, and 59,889 tons consumed in manufactured products, such as "Insulex," plaster board, "Gyproc," etc.

MANITOBA

Development of gypsum in Manitoba started in 1901, when the Manitoba Union Mining Co. staked out several claims and erected a small mill at Old Gypsumville on Lake Manitoba, 12 miles southwest of the present village. At that time there was no rail connection, and the calcined gypsum was shipped down the lake to Delta whence it was distributed to consuming points. Later a track was laid from the quarries to the lake, so that gypsum could be delivered to the mill the year round. In 1904 the property was purchased by the Manitoba Gypsum Co. The mill burnt down in 1906, and a new mill was then erected at Winnipeg. For a time the crude gypsum was shipped by barge down the lake to Delta, thence by rail to Winnipeg; but in 1910 the Oak Point branch of the Canadian National Railway was extended to Gypsumville, and shipments have subsequently been all by rail. The Manitoba Gypsum Co. which is still the only producer in Manitoba, was taken over by the Canada Gypsum & Alabastine Co. (Ltd.) in 1928.

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Quarry methods at the deposit are simple. After clearing away the underbrush and removing the overburden by scrapers, a row of four holes, 4 feet apart and 4 feet back from the face, is put down to the level of the quarry floor. These are loaded with only a comparatively light charge of 60 per cent dynamite. The broken gypsum is loaded by steam-shovel directly into railway cars. Excessively large lumps are broken by hand in the cars. About 15 men are employed the year round. Shipments average 160 cars a month during the summer.

More or less continuous pumping is necessary to keep the quarry dry. A more efficient drainage system to Lake St. Martin, which would permit considerably deeper quarrying, is a likely development in the near future.

Practically the entire production, with the exception of a small amount shipped into Alberta, is consumed within the Province.

NEW BRUNSWICK

Gypsum was first discovered in New Brunswick in the district adjacent to the town of Hillsborough. Old excavations and small waste dumps now covered by undergrowth indicate that they were worked at an early date. Prior to 1847, small shipments were made from time to time by farmers of the district. The gypsum was dug wherever it was easiest to obtain and was hauled in winter on sleds to the nearest shipping point on the Petitcodiac River. There it was purchased by masters of small coasting vessels, who in turn sold it to the calcining mills situated on the Atlantic seaboard of the United States. This business was profitable to the shipowners because, had it not been for this cargo, the vessels would have had to return empty. Much of this gypsum went to plaster mills at Lubec, Me. About 1847 the company that owned these mills obtained mining rights to the properties in the Hillsborough district and soon succeeded in making shipments during the winter as well as throughout the summer. After producing never to exceed 3,000 tons for a number of years, this company transferred its mining rights in 1854 to a New York company, which erected a large plant, built a railroad from the quarry to the river, and constructed wharves for the accommodation of vessels. This new mill ran until about 1873, when it was destroyed by fire, however, it was replaced at once by a new plant, which came into operation in 1875. In 1876 the extension of the Intercolonial Railroad through this district provided facilities for shipping to Canadian consuming centers as well as to the United States.

At present there are two companies operating in the Hillsborough district, one American and one Canadian. The American company ships its rock to the United States in the crude form, but has not been very active in recent years. On the other hand, the Canadian company -- the Albert Manufacturing Co. (Ltd.), the oldest operating company in this district -- has a plaster plant at Hillsborough which is reported to have the largest kettle capacity of any plant in Canada. 11/ In 1925

11/ Johnson, F. C. (American Vice Consul, Fredericton, N. B.), Production of Gypsum in New Brunswick. Consular Report, May 15, 1926.

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the daily capacity was increased from 100 tons to 240 tons of plaster in 10 hours. This plant is said to produce annually about 15,000 tons of hard-wall plaster and an equal quantity of finishing plaster and allied products. The company's trade-mark is "Hammer Brand," and its goods are sold principally in Canada, though small quantities of finished products are exported to South Africa and Australia. The total exports of crude gypsum from New Brunswick average about 20,000 tons annually, practically all of which is shipped to the United States.

BRITISH COLUMBIA

The gypsum industry in British Columbia dates back only to 1911, when 780 short tons were shipped to Vancouver and Victoria for use in the manufacture of cement. Small quantities were produced in this Province in 1913 and again in 1917. From 1921 to 1925 minor tonnages - not over 325 tons annually - were produced and sold as land plaster for agricultural purposes. Not until 1926 did operations in British Columbia become at all extensive. In that year 20,916 short tons were shipped to cement plants in Vancouver, B. C., and Exshaw, Alberta. The British Columbia Gypsum Co. began operations in 1926 and commenced shipments from their quarry at Falkland to their mill at Port Mann. The calcining plant at Port Mann is equipped to manufacture all grades of gypsum plaster and to fabricate plaster board.

This plant and the quarry at Falkland were taken over in March, 1928, by the Canada Gypsum & Alabastine Co. (Ltd.) of Ontario, which continued operations at nearly full capacity.

STATISTICAL SUMMARY

Canada ranks third among the gypsum producing countries of the world, but as yet it is not a large consumer of this material. None of the principal outlets for gypsum -- as a retarder in the cement industry, as agricultural land plaster, or as a source of calcined material for the local manufacture of gypsum products -- has attained important proportions in the Dominion.

As previously noted, gypsum deposits were discovered soon after the first settlement of the Maritime Provinces, and there is authentic record of production in Ontario about the year 1822. From this time on Canada's output has grown steadily but slowly until in 1928 it amounted to 1,205,846 tons having a value of $3,622,007. Even in that year, however, more than two-thirds of the tonnage was exported to the United States, much of it simply as crude rock.

Table 3 shows the production of crude gypsum and the amounts exported for the years 1890 to 1928, inclusive:

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Table 3.- Production and exports of Canadian crude gypsum, 1890-1928 1/

Year	Production			Exports		
	Quantity, short tons	Value	Price per ton	Quantity, short tons	Value	Percentage of production
1890	226,509	$ 194,033	$ .86	175,691	$ 192,254	78
1891	203,605	206,251	1.01	171,311	181,795	84
1892	241,048	241,127	1.00	189,860	201,086	79
1893	192,568	196,150	1.02	162,192	159,262	84
1894	223,631	202,031	.90	160,412	158,124	72
1895	226,178	202,608	.89	189,486	193,244	84
1896	207,032	178,061	.86	181,277	185,589	88
1897	239,691	244,531	1.02	189,206	197,150	79
1898	219,256	232,515	1.06	169,614	174,907	77
1899	244,566	257,329	1.05	201,626	208,090	82
1900	252,101	259,009	1.02	188,262	201,912	75
1901	293,799	340,148	1.16	236,247	231,594	80
1902	333,599	379,479	1.14	289,600	295,215	87
1903	314,489	388,458	1.24	287,496	311,580	91
1904	415,961	373,474	1.08	298,211	316,436	72
1905	442,158	586,168	1.32	359,246	388,474	81
1906	470,723	643,294	1.37	404,464	462,814	86
1907	485,921	646,914	1.33	375,026	424,794	77
1908	340,964	575,701	1.69	280,091	324,574	82
1909	473,129	809,632	1.71	315,201	372,286	67
1910	525,246	934,446	1.78	346,081	416,725	66
1911	518,383	993,394	1.92	362,102	425,161	70
1912	578,458	1,324,620	2.29	364,643	423,208	63
1913	636,370	1,447,739	2.27	417,302	504,383	66
1914	516,880	1,156,207	2.24	345,830	404,234	67
1915	474,815	854,929	1.80	292,234	336,380	62
1916	342,915	738,593	2.15	221,156	252,476	64
1917	336,332	881,984	2.62	224,423	245,182	67
1918	152,287	823,006	5.40	67,824	80,843	45
1919	299,063	1,215,287	4.06	148,394	199,857	50
1920	429,144	1,893,991	4.41	244,428	413,522	57
1921	386,550	1,785,538	4.61	230,011	417,502	59
1922	559,265	2,160,898	3.86	325,354	505,464	58
1923	578,301	2,243,100	3.87	397,329	578,859	69
1924	646,016	2,208,108	3.41	472,236	747,829	73
1925	740,323	2,389,891	3.22	533,646	861,468	72
1926	883,728	2,770,813	3.13	668,064	1,069,123	76
1927	1,063,117	3,251,015	3.06	586,808	959,858	55
1928	1,205,846	3,622,007	3.00	824,536	1,240,987	68

1/ Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada, Ottawa, Canada.

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Table 4. - Production of crude gypsum in Canada by Provinces, 1890 - 1928[1/]

Year	Nova Scotia		New Brunswick		Ontario		Manitoba		British Columbia		Total	
	Quantity, short tons	Value	Quantity, short tons	Value	Quantity, short tons	Value	Quantity, short tons	Value	Quantity, short tons	Value	Quantity, short tons	Value
1890	181,285	$ 154,972	39,024	$ 30,986	6,200	$ 8,075					226,509	$ 194,033
1891	161,934	153,955	36,011	33,996	5,660	18,300					203,605	206,251
1892	197,019	170,021	39,709	65,707	4,320	5,399					241,048	241,127
1893	152,754	144,111	36,916	41,846	2,898	10,193					192,568	196,150
1894	168,300	147,644	52,962	48,200	2,369	6,187					223,631	202,031
1895	156,809	133,929	66,949	63,839	2,420	4,840					226,178	202,608
1896	136,590	111,251	67,137	59,024	3,305	7,786					207,032	178,061
1897	155,572	121,754	82,658	118,116	1,461	4,661					239,691	244,531
1898	132,086	106,610	86,083	121,704	1,087	4,201					219,256	232,515
1899	126,754	102,055	116,792	151,296	1,020	3,978					244,566	257,329
1900	138,712	108,828	112,294	145,850	1,095	4,331					252,101	259,009
1901	170,100	136,947	121,595	189,709	1,504	5,692	600	$ 7,800			293,799	340,148
1902	206,087	181,425	124,041	170,153	1,917	7,699	1,554	20,202			333,599	379,479
1903	189,427	173,881	119,182	172,080	2,720	21,988	3,160	20,510			314,489	388,459
1904	218,580	153,600	190,991	187,524	2,390	18,350	4,000	14,000			415,961	373,474
1905	272,252	298,248	163,553	232,586	1,853	23,834	4,500	31,500			442,158	586,168
1906	333,312	345,414	131,246	250,960	2,965	24,420	3,200	22,500			470,723	643,294
1907	357,411	380,859	118,106	213,638	10,404	52,417					485,921	646,914
1908	234,455	230,433	81,620	191,312	10,389	42,456	14,500	111,500			340,964	575,701
1909	345,682	364,379	98,716	226,975	11,731	48,278	17,000	170,000			473,129	809,832
1910	400,455	458,638	90,236	213,579	15,055	67,229	19,500	195,000			525,246	934,446
1911	353,999	406,457	93,205	115,044	27,399	98,018	43,000	372,000	780	$ 1,875	518,383	993,394
1912	376,082	481,493	82,757	185,821	53,119	176,056	66,500	481,250			578,458	1,324,620
1913	404,801	479,515	103,954	279,395	63,315	208,029	65,100	479,500	200	1,300	637,370	1,447,739
1914	303,155	368,931	79,083	206,680	81,219	204,033	53,423	382,563			516,880	1,156,207
1915	298,864	339,857	74,501	184,929	81,172	190,422	20,278	139,721			474,815	854,929
1916	238,212	278,160	39,546	153,064	36,668	116,086	28,489	191,283			342,915	738,593
1917	215,472	301,261	38,556	191,631	48,947	130,138	33,347	258,934	10	20	336,332	881,984
1918	49,365	115,976	27,225	214,114	38,214	151,564	37,483	341,352			152,287	823,006
1919	163,852	250,174	42,409	315,656	59,899	278,120	32,903	371,337			299,063	1,215,287
1920	260,661	573,752	49,405	428,183	74,707	404,162	44,371	487,894			429,144	1,893,991
1921	206,831	511,883	54,030	360,220	84,790	433,053	40,859	480,282	40	100	386,550	1,785,538
1922	332,404	580,148	82,462	517,668	110,227	621,668	34,072	440,914	100	500	559,265	2,160,898
1923	341,705	747,934	104,740	564,680	99,958	542,317	31,575	386,554	323	1,615	578,301	2,243,100
1924	441,752	915,845	86,738	476,804	88,121	467,097	29,375	348,212	30	150	646,016	2,208,108
1925	551,230	1,070,408	71,745	408,917	82,020	491,833	35,088	417,868	240	865	740,323	2,389,891
1926	678,107	1,187,918	59,546	468,411	89,987	496,059	35,172	461,461	20,916	156,964	883,728	2,770,813
1927	829,438	1,512,015	85,293	524,550	83,998	500,688	39,895	512,008	24,493	201,754	1,063,117	3,251,015
1928	971,736	1,764,262	74,783	500,502	85,811	553,271	51,285	609,039	22,231	194,933	1,205,846	3,622,007

1/ Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada, Ottawa, Canada.

6247.

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It will be noted that for 20 years the percentage of crude rock has changed but little. Home consumption, it seems, though still relatively small, has managed to keep step with the export trade which has more than doubled within the past five years.

Table 4 and Figure 1 show the production of crude gypsum in Canada by Provinces and the quantity exported for the years 1890 to 1928, inclusive. It will be noticed that the exports of crude gypsum follow closely the production in Nova Scotia. This Province, moreover, is the principal foreign source of crude gypsum for the United States.

Production

Nova Scotia, the leading Province as regards both production and exports of gypsum, produced in 1928, 81 per cent of the quantity and 49 per cent of the value of the total production of the Dominion. 12/ While the output of Nova Scotia has been advancing by leaps and bounds, the production of New Brunswick, despite its relatively high unit value, has remained nearly stationary for the past 5 or 10 years. As compared with the period 1899 to 1907 it shows a decided falling off. This is due in great part to the energetic activities of certain American-owned companies in Nova Scotia. New Brunswick at present has only one active producer, the Albert Manufacturing Co., a Canadian concern. During 1928 the Province of New Brunswick produced 74,783 tons of crude gypsum having a value of $500,503, or 6 per cent of total quantity and 14 per cent of the total value of the gypsum produced in Canada.

In Ontario, which is practically self-contained as regards its production and consumption, the output though no longer growing has been well maintained; in 1928 it amounted to 85,811 tons valued at $553,271 or 7 per cent of the total quantity and 15 per cent of the total value produced in the Dominion. The entire Ontarian production of finished gypsum products is furnished by the Canada Gypsum & Alabastine Co., (Ltd.), a Canadian-owned company.

The production of gypsum in Manitoba, which started in 1901 with 600 tons valued at $7,800, has grown fairly steadily until in 1928 it amounted to 51,285 short tons valued at $609,039, or 4 per cent of the total quantity and 17 per cent of the total value for Canada. Only one producer operated in Manitoba during 1928, the Manitoba Gypsum Co., a subsidiary of the Canada Gypsum & Alabastine Co., (Ltd.) of Ontario.

Production of gypsum in British Columbia, which started in 1911 was more or less intermittent and of negligible quantity until 1926, when it jumped to 20,916 tons valued at $156,964. There is only one company operating in this Province which in 1928 produced 22,231 tons valued at $194,933, or 2 per cent of the total production and 5 per cent of the total value for Canada.

12/ Based on figures published in the Annual Report, Mineral Production of Canada, Ottawa, Canada.

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Consumption

Since 1920 the estimated consumption of crude gypsum in Canada is about 35 per cent of the average production, estimating an annual consumption of 250,000 tons and an average production of 721,000 tons. This consumption may be divided as follows: As agricultural fertilizer or land plaster, 7,000 tons annually, or 3 per cent of the total; as a retarder in the manufacture of cement, 36,000 tons or 14 per cent; 13/ and the remainder or 207,000 tons consumed in the gypsum products industry.

The use of gypsum for agricultural purposes in Canada is following the same trend as in the United States, much small quantities being used for this purpose than in former years. A conservative estimate would place the figure at 6,000 to 8,000 short tons annually. The cement industry, on the other hand, is taking increasing quantities of crude gypsum as a retarder for their product, and as the cement industry expands, as it is bound to do, this use will increase.

Table 5 shows the production, imports, exports, and estimated apparent consumption of crude gypsum in Canada for the years 1890 to 1928, inclusive:

13/ Figuring 3 per cent of the clinker as gypsum, on a basis of an average production of 1,200,000 tons of cement.

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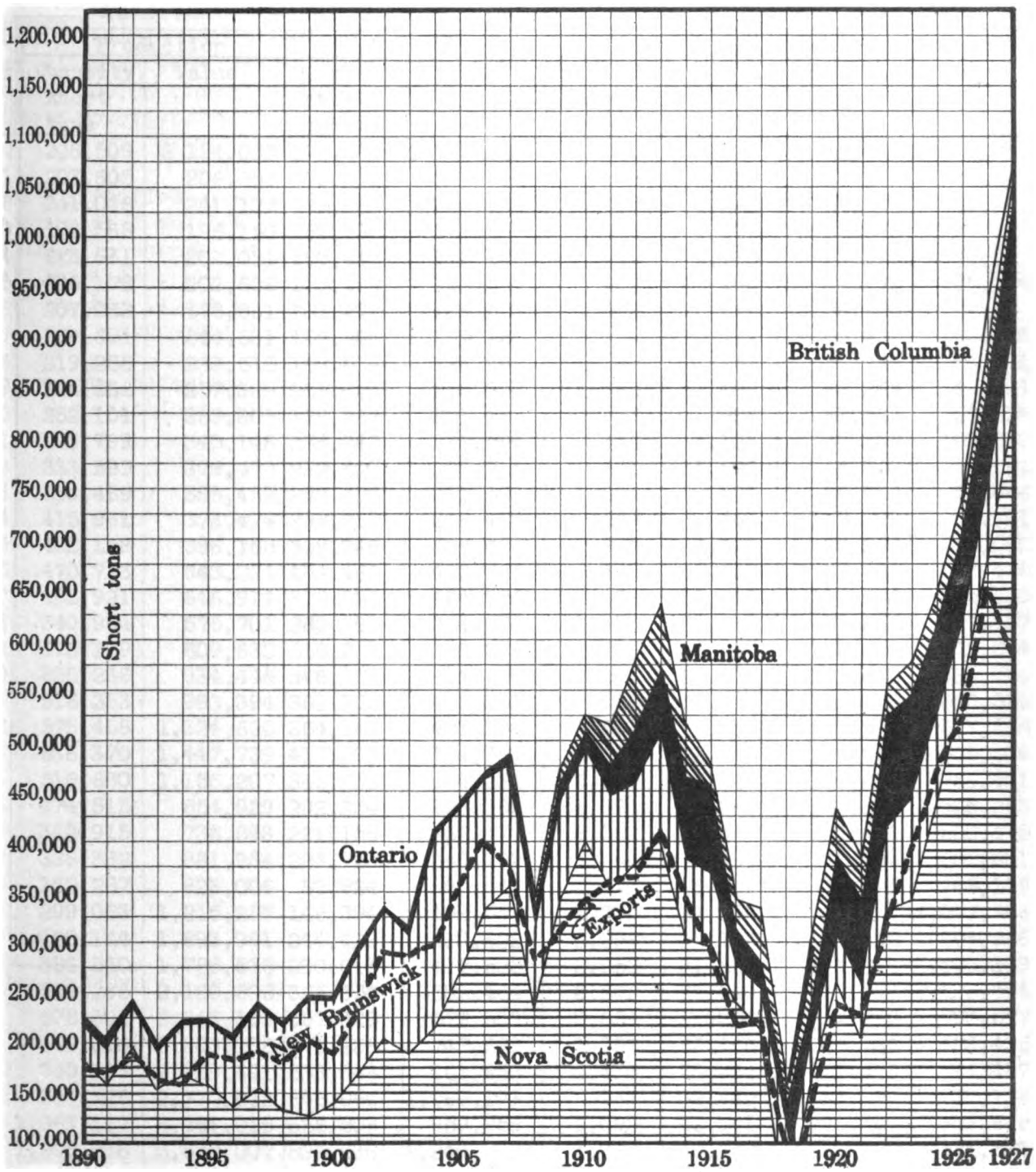

Figure 1. — Production of crude gypsum in Canada by provinces and total exports

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Table 5. - Production, exports, imports, and apparent consumption of crude gypsum in Canada, 1890-1928 1/

Year	Production		Exports		Imports		Apparent Consumption	
	Quantity, short tons	Value	Quantity, short tons	Value	Quantity, short tons	Value	Quantity short tons	Value
1890	226,509	$ 194,033	175,691	$ 192,264	1,050	$ 1,928	51,868	$ 3,707
1891	203,605	206,251	171,311	181,795	376	640	32,670	25,096
1892	241,048	241,127	189,860	201,086	626	1,182	51,814	41,223
1893	192,568	196,150	162,192	159,262	496	1,014	30,872	37,902
1894	223,631	202,031	160,412	158,124	---	1,660	63,219	45,567
1895	226,178	202,608	189,486	193,244	603	960	37,295	10,324
1896	207,032	178,061	181,277	186,589	1,045	848	26,800	---
1897	239,691	244,531	189,206	197,150	---	772	50,485	48,153
1898	219,256	232,515	169,614	174,907	1,147	1,742	50,789	59,350
1899	244,566	257,329	201,626	208,090	325	692	43,265	49,931
1900	252,101	259,009	188,262	201,912	77	958	63,913	58,055
1901	293,799	340,148	236,247	231,594	286	1,125	57,838	109,679
1902	333,599	379,479	289,600	295,215	541	1,697	44,540	85,961
1903	314,489	388,459	287,496	311,580	1,076	2,187	28,069	79,066
1904	415,961	373,474	298,211	316,436	249	663	117,999	57,701
1905	442,158	586,168	359,246	388,474	2,344	7,386	85,256	205,080
1906	470,723	643,294	404,464	462,814	6,332	22,008	72,591	202,488
1907	485,921	646,914	375,026	424,794	9,189	23,410	120,084	245,530
1908	340,964	575,701	280,091	324,574	9,393	36,510	70,266	287,637
1909	473,129	809,632	315,201	372,286	10,317	35,268	168,245	472,614
1910	525,246	934,446	346,081	416,725	12,271	21,073	191,436	538,794
1911	518,383	993,394	362,102	425,161	2,035	11,792	158,316	580,025
1912	578,458	1,324,620	364,643	423,208	3,503	16,254	217,318	917,666
1913	636,370	1,447,739	417,302	504,383	4,522	21,763	223,590	965.119
1914	516,880	1,156,207	345,830	404,234	3,572	16,448	174,622	768,421
1915	474,815	854,929	292,234	336,380	1,799	7,734	184,380	526,283
1916	342,915	738,593	221,156	252,476	3,022	14,358	124,781	500,475
1917	336,332	881,984	224,423	245,182	64	999	111,973	637,801
1918	152,287	823,006	67,824	80,843	112	2,015	84,575	744,178
1919	299,063	1,215,287	148,394	199,857	1,238	22,556	151,907	1,037,986
1920	429,144	1,893,991	244,428	413,522	2,294	25,477	187,010	1,505,946
1921	386,550	1,785,538	230,011	417,502	2,952	31,303	159,491	1,399,339
1922	559,265	2,160,898	325,354	505,464	2,872	21,040	236,783	1,676,474
1923	578,301	2,243,100	397,329	578,859	3,654	39,336	184,626	1,703,577
1924	646,016	2,208,108	472,236	747,829	3,252	63,156	177,032	1,523,435
1925	740,323	2,389,891	533,646	861,468	4,433	66,064	211,110	1,594,487
1926	883,728	2,770,813	668,064	1,069,123	933	32,442	216,597	1,734,132
1927	1,063,117	3,251,015	588,808	959,858	1,092	42,741	475,401	2,333,898
1928	1,205,846	3,622,007	824,536	1,240,987	1,097	40,312	382,407	2,421,332

1/ Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada, Ottawa, Canada.

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Plant Location

The gypsum products industry in Canada is becoming of greater importance and has made rapid strides during the past 10 years. The fabricating industry is concentrated chiefly in Ontario and obtains its raw material from that Province and from the Maritime Provinces, especially Nova Scotia.

There are two plants in Ontario at present, manufacturing all grades of calcined gypsum products. Practically all of these products are consumed within the Province; only small quantities are shipped into Quebec or exported to the United States.

Although Nova Scotia produces by far the larger part of the gypsum output in Canada, its local manufacturing industry is of little consequence, as there were only two fabricating plants in operation in 1928, however, it furnished considerable quantities of crude gypsum to manufacturing plants in Ontario and Quebec.

The production of crude gypsum in New Brunswick, Manitoba, and British Columbia is practically all used in the gypsum products plants in those Provinces, small quantities being shipped in the crude state to cement plants for use as a retarder.

Tables 6 and 7 show the production of crude gypsum and sales of calcined gypsum for the years 1905 to 1928, and the sales and shipments of crude, ground, and calcined gypsum for the same period. Figures for sales of calcined gypsum prior to 1905 are not available.

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Table 6. - Canadian production of crude gypsum and sales of calcined gypsum, 1905 - 1928 1/

Year	Production of Crude Gypsum			Sales of Calcined Gypsum		
	Quantity, short tons	Value	Price per ton	Quantity, short tons	Value	Price per tons
1905	442,158	$586,168	$1.32	26,748	$168,243	$6.29
1906	469,022	643,294	1.37	23,695	159,511	6.73
1907	485,921	646,914	1.33	24,521	156,815	6.40
1908	340,964	575,701	1.69	33,272	242,701	7.29
1909	473,129	809,632	1.71	40,841	326,435	7.99
1910	525,246	934,446	1.78	49,552	408,370	8.24
1911	518,383	993,394	1.92	61,411	489,192	7.97
1912	478,458	1,324,620	2.29	109,394	770,031	7.04
1913	636,370	1,447,739	2.27	126,629	811,670	6.41
1914	516,880	1,156,207	2.24	109,613	679,504	6.20
1915	474,815	854,929	1.80	72,678	389,340	5.36
1916	342,915	738,593	2.15	71,246	427,759	6.00
1917	336,332	881,984	2.62	75,424	564,119	7.48
1918	152,287	823,006	5.40	78,927	707,579	8.96
1919	299,063	1,215,287	4.06	94,501	921,526	9.75
1920	429,144	1,893,991	4.41	111,708	1,243,302	11.13
1921	386,550	1,785,538	4.61	117,181	1,242,762	10.60
1922	559,265	2,160,898	3.86	134,665	1,436,661	10.67
1923	578,301	2,243,100	3.87	120,536	1,359,733	11.28
1924	646,016	2,208,108	3.41	119,658	1,229,250	10.27
1925	740,323	2,389,891	3.22	154,952	1,335,101	8.62
1926	883,728	2,770,813	3.13	149,459	1,505,572	10.07
1927	1,063,117	3,251,015	3.06	165,289	1,613,824	9.76
1928	1,205,846	3,622,007	3.00	176,411	1,805,962	10.24

1/ Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada, Ottawa, Canada.

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Table 7. - Sales and shipments of crude, ground, and calcined gypsum in Canada. 1/

Year	Crude (lump)			Crude (ground)			Calcined			Total		
	Quantity, short tons	Value	Price per ton	Quantity, short tons	Value	Price per ton	Quantity, short tons	Value	Price per ton	Quantity, short tons	Value	Price per ton
1905	412,155	$409,146	$ .99	3,255	$ 8,779	$2.70	26,748	$168,243	$6.29	442,158	$586,168	$1.32
1906	442,132	473,960	1.07	3,195	9,833	3.07	23,695	159,511	6.73	469,022	643,294	1.37
1907	454,668	473,831	1.04	6,732	16,268	2.42	24,521	156,815	6.40	485,921	646,914	1.33
1908	298,188	307,532	1.03	9,504	25,469	2.68	33,272	242,701	7.29	340,964	575,701	1.69
1909	423,474	457,038	1.08	8,814	26,159	2.97	40,841	326,435	7.99	473,129	809,632	1.71
1910	469,573	508,636	1.08	6,121	17,390	2.84	49,552	408,370	8.24	525,246	934,446	1.78
1911	449,823	481,077	1.07	7,149	23,125	3.23	61,411	489,192	7.97	518,383	993,394	1.92
1912	453,577	525,345	1.16	5,467	29,244	1.89	109,394	770,031	7.04	578,458	1,324,620	2.29
1913	499,460	615,493	1.23	10,231	20,576	2.00	126,629	811,670	6.41	636,370	1,447,739	2.27
1914	401,170	462,207	1.15	6,097	14,496	2.38	109,613	679,504	6.20	516,880	1,156,207	2.24
1915	395,682	442,822	1.12	6,455	22,767	3.53	72,678	389,340	5.36	474,815	854,929	1.80
1916	265,593	291,161	1.10	6,096	19,673	3.23	71,246	427,759	6.00	342,915	738,593	2.15
1917	256,065	298,643	1.17	4,843	19,222	3.97	75,424	564,119	7.48	336,332	881,984	2.62
1918	68,802	102,806	1.50	4,558	12,621	2.77	78,927	707,579	8.96	152,287	823,006	5.40
1919	200,720	274,860	1.33	3,842	18,901	4.92	94,501	921,526	9.75	299,063	1,215,287	4.06
1920	310,821	604,105	1.94	6,615	46,584	7.04	111,708	1,243,302	11.13	429,144	1,893,991	4.41
1921	262,349	518,747	1.98	7,020	24,029	3.42	117,181	1,242,762	10.60	386,550	1,785,538	4.61
1922	413,831	688,357	1.64	5,769	35,830	6.22	134,665	1,436,661	10.67	559,265	2,160,898	3.86
1923	450,313	837,648	1.86	7,452	45,719	6.13	120,536	1,359,733	11.28	578,301	2,243,100	3.87
1924	520,880	946,976	1.82	5,478	31,882	5.82	119,658	1,229,250	10.27	646,016	2,208,108	3.41
1925	579,378	1,018,947	1.76	5,993	35,843	5.98	154,952	1,335,101	8.62	740,323	2,389,891	3.22
1926	728,395	1,228,428	1.69	5,674	36,813	6.27	149,459	1,505,572	10.07	883,728	2,770,813	3.13
1927	890,763	1,594,553	1.79	7,065	42,633	6.03	165,289	1,613,824	9.76	1,063,117	3,251,015	3.06
1928	1,019,886	1,761,638	1.73	9,549	54,407	5.70	176,411	1,805,962	10.24	1,205,846	3,622,007	3.00

1/ Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada, Ottawa, Canada.

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Exports

Canada is the largest exporter of crude gypsum in the world, shipping in 1928, 824,536 short tons valued at $1,240,987; this represents 68 per cent of her total tonnage production. Although this tonnage seems large, the percentage exported is nevertheless somewhat smaller than in past years. During the 10-year period, 1890 to 1899, an average of 81 per cent of the total production was exported and during the next decade, 1900 to 1910 an average of 78 per cent of the total production was exported, but in the following 10-year period, 1910 to 1919, a decided decrease took place when only an average of 64 per cent of the production was exported. The period, 1920 to 1928, showed a slight increase, when an average of 66 per cent of the total production was exported.

Owing to the shortage of ships during and immediately after the war and because of other abnormal conditions, the average for 10-year periods are doubtless not as representative of the actual trends as data for five-year periods before and after this interruption. If we take the years 1909 - 1913, inclusive, as representing pre-war conditions for comparison with the present-day conditions as shown by the average for the five-year period, 1924-1928, we find that the increase in the percentages of exports has been only from 66 per cent to 68 per cent. Since both production and exports are now roughly twice as large as they were before the war, it is evident that Canadian home consumption has increased almost as fast as the export trade.

Imports

The following Table 8 shows the imports of gypsum (crude, ground, and plaster of Paris) into Canada for the years 1890 to 1928, inclusive:

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Table 8. - Canadian imports of gypsum, 1890-1928 1/

Fiscal year	Crude Gypsum		Ground Gypsum		Plaster of Paris	
	Quantity, short tons	Value	Quantity, short tons	Value	Quantity, short tons	Value
1890	1,050	$1,928	217	$2,136	347	$6,004
1891	376	640	18	215	518	8,412
1892	626	1,182	155	2,149	583	5,595
1893	496	1,014	71	442	276	3,143
1894	---	1,660	12	198	211	2,386
1895	603	960	10	88	129	1,619
1896	1,045	848	32	198	148	2,000
1897	---	772	28	123	485	4,489
1898	1,147	1,742	18	293	165	2,025
1899	325	692	16	338	248	3,120
1900	77	958	3	69	425	6,492
1901	286	1,125	33	1,097	251	3,978
1902	541	1,697	28	249	238	2,641
1903	1,076	2,187	34	228	315	3,599
1904	249	663	54	559	312	2,885
1905	2,344	7,386	1,128	2,681	3,962	37,643
1906	6,332	22,008	984	1,799	6,433	43,742
1907	2/9,189	23,410	310	1,619	9,925	58,364
1908	9,393	36,510	191	1,781	7,510	51,328
1909	10,317	35,268	3,143	5,765	8,504	64,849
Calendar year						
1910	12,271	21,073	6,691	13,242	19,045	135,483
1911	2,035	11,792	2,681	3,619	28,518	190,371
1912	3,503	16,254	7,072	19,651	32,496	232,198
1913	4,522	21,763	---	11,770	20,113	154,719
1914	3,572	16,448	537	4,301	7,739	54,282
1915	1,799	7,734	134	2,253	2,442	15,832
1916	3,022	14,358	283	3,404	3,786	25,529
1917	64	999	282	5,355	3,101	29,106
1918	112	2,015	79	1,836	1,095	18,214
1919	1,238	22,556	85	2,695	1,525	22,204
1920	2,294	35,477	118	3,966	2,922	48,859
1921	2,952	31,303	41	2,427	2,635	42,325
1922	2,872	21,040	148	5,592	3,657	49,015
1923	3,654	39,336	78	3,253	3,617	54,591
1924	3,252	63,156	102	2,174	3,969	62,770
1925	4,433	66,064	119	3,858	4,369	66,386
1926	933	32,442	209	6,846	5,156	79,853
1927	1,092	42,741	111	2,996	7,016	101,823
1928	1,097	40,312	256	7,379	10,563	142,550

1/ Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada, Ottawa, Canada.
2/ Nine months.

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The imports of crude and calcined gypsum into Canada have varied considerably from year to year and follow fairly closely the tariff changes both in the United States and Canada. As compared with the production of crude gypsum or with the output of manufactured gypsum products they are relatively small and for this reason fluctuations are not particularly significant. During the past 10 years the imports of plaster of Paris have been generally on the increase, amounting to 10,563 short tons valued at $142,550 in 1928. The imports of ground crude gypsum likewise were the highest during the past 10 years, reaching 256 tons valued at $7,379 in 1928. Imports of crude gypsum, on the other hand, fell off considerably during this period, amounting to only 1,097 tons valued at $40,312 in 1928.

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